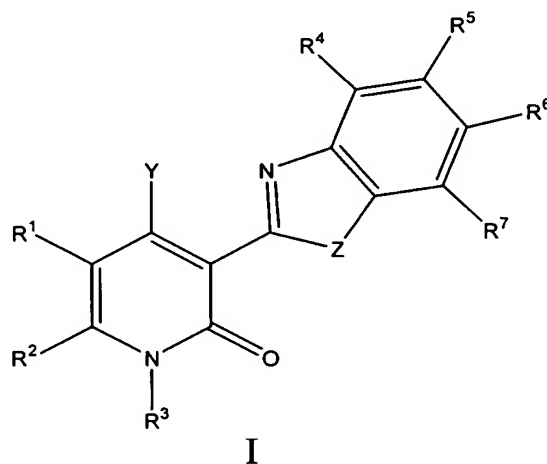


CLAIMS

What is claimed is:

- 1 1. A compound having the structure I, a tautomer of the
2 compound, a pharmaceutically acceptable salt of the compound, or a
3 pharmaceutically acceptable salt of the tautomer



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wherein,

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Y is selected from the group consisting of -OH, -OR⁸ groups, -SH, -SR⁹ groups, -NR¹⁰R¹¹ groups, -CN, -C(=O)-R¹² groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted alkynyl groups, substituted and unsubstituted aralkyl groups, substituted and unsubstituted heterocyclalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclaminoalkyl groups, substituted and unsubstituted diheterocyclaminoalkyl groups, substituted and

19 unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted
20 and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups,
21 substituted and unsubstituted heterocyclyl groups, substituted
22 and unsubstituted aryl groups, substituted and unsubstituted
23 hydroxyalkyl groups, substituted and unsubstituted alkoxyalkyl
24 groups, substituted and unsubstituted aryloxyalkyl groups, and
25 substituted and unsubstituted heterocyclloxyalkyl groups;

26 Z is selected from the group consisting of O, S, and NR^{13}
27 groups;

28 R^1 and R^2 join to form a 6 membered substituted or
29 unsubstituted ring comprising at least one O, N, or S atom;

30 R^3 and R^{13} may be the same or different and are selected from
31 the group consisting of H, -OH, substituted and unsubstituted
32 alkoxy groups, substituted and unsubstituted alkyl groups,
33 substituted and unsubstituted aryl groups, $-\text{C}(=\text{O})\text{H}$, $-\text{C}(=\text{O})$ -alkyl
34 groups, and $-\text{C}(=\text{O})$ -aryl groups;

35 R^4 , R^5 , R^6 , and R^7 may be the same or different and are
36 independently selected from the group consisting of H, Cl, Br, F,
37 I, $-\text{NO}_2$, $-\text{CN}$, $-\text{OH}$, $-\text{OR}^{14}$ groups, $-\text{NR}^{15}\text{R}^{16}$ groups, $-\text{C}(=\text{O})\text{R}^{17}$
38 groups, $-\text{SH}$, $-\text{SR}^{18}$ groups, $-\text{S}(=\text{O})\text{R}^{19}$ groups, $\text{S}(=\text{O})_2\text{R}^{20}$
39 groups, substituted and unsubstituted amidinyl groups,
40 substituted and unsubstituted guanidinyl groups, substituted and
41 unsubstituted primary, secondary, and tertiary alkyl groups,
42 substituted and unsubstituted aryl groups, substituted and
43 unsubstituted alkenyl groups, substituted and unsubstituted
44 alkynyl groups, substituted and unsubstituted heterocyclyl
45 groups, substituted and unsubstituted alkylaminoalkyl groups,
46 substituted and unsubstituted dialkylaminoalkyl groups,
47 substituted and unsubstituted arylaminoalkyl groups, substituted

48 and unsubstituted diarylaminoalkyl groups, substituted and
49 unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and
50 unsubstituted heterocyclalkyl groups, substituted and
51 unsubstituted aminoalkyl groups, substituted and unsubstituted
52 heterocyclaminoalkyl groups, substituted and unsubstituted
53 diheterocyclaminoalkyl groups, substituted and unsubstituted
54 (alkyl)(heterocycl)aminoalkyl groups, substituted and
55 unsubstituted (aryl)(heterocycl)aminoalkyl groups, substituted
56 and unsubstituted hydroxyalkyl groups, substituted and
57 unsubstituted alkoxyalkyl groups, substituted and unsubstituted
58 aryloxyalkyl groups, and substituted and unsubstituted
59 heterocycloxyalkyl groups;

60 R^8 is selected from the group consisting of substituted and
61 unsubstituted alkyl groups, substituted and unsubstituted aryl
62 groups, substituted and unsubstituted heterocycl groups,
63 substituted and unsubstituted heterocyclalkyl groups, $-C(=O)H$,
64 $-C(=O)$ -alkyl groups, $-C(=O)$ -aryl groups, $-C(=O)O$ -alkyl groups,
65 $-C(=O)O$ -aryl groups, $-C(=O)NH_2$, $-C(=O)NH(alkyl)$ groups,
66 $-C(=O)NH(aryl)$ groups, $-C(=O)N(alkyl)_2$ groups, $-C(=O)N(aryl)_2$
67 groups, $-C(=O)N(alkyl)(aryl)$ groups, $-NH_2$, $-NH(alkyl)$ groups,
68 $-NH(aryl)$ groups, $-N(alkyl)_2$ groups, $-N(alkyl)(aryl)$ groups,
69 $-N(aryl)_2$ groups, $-C(=O)NH(heterocycl)$ groups,
70 $-C(=O)N(heterocycl)_2$ groups, $-C(=O)N(alkyl)(heterocycl)$
71 groups, and $-C(=O)N(aryl)(heterocycl)$ groups;

72 R^9 and R^{18} may be the same or different and are independently
73 selected from the group consisting of substituted and
74 unsubstituted alkyl groups, and substituted and unsubstituted
75 aryl groups;

76 R¹⁰ is selected from the group consisting of H, substituted and
77 unsubstituted alkyl groups, substituted and unsubstituted aryl
78 groups, and substituted and unsubstituted heterocyclyl groups;

79 R¹¹ is selected from the group consisting of H, substituted and
80 unsubstituted alkyl groups, substituted and unsubstituted aryl
81 groups, substituted and unsubstituted heterocyclyl groups, -OH,
82 alkoxy groups, aryloxy groups, -NH₂, substituted and
83 unsubstituted heterocyclylalkyl groups, substituted and
84 unsubstituted aminoalkyl groups, substituted and unsubstituted
85 alkylaminoalkyl groups, substituted and unsubstituted
86 dialkylaminoalkyl groups, substituted and unsubstituted
87 arylaminoalkyl groups, substituted and unsubstituted
88 diarylaminoalkyl groups, substituted and unsubstituted
89 (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted
90 alkylamino groups, substituted and unsubstituted arylamino
91 groups, substituted and unsubstituted dialkylamino groups,
92 substituted and unsubstituted diarylamino groups, substituted
93 and unsubstituted (alkyl)(aryl)amino groups, -C(=O)H, -C(=O)-
94 alkyl groups, -C(=O)-aryl groups, -C(=O)O-alkyl groups,
95 -C(=O)O-aryl groups, -C(=O)NH₂, -C(=O)NH(alkyl) groups,
96 -C(=O)NH(aryl) groups, -C(=O)N(alkyl)₂ groups, -C(=O)N(aryl)₂
97 groups, -C(=O)N(alkyl)(aryl) groups, -C(=O)-heterocyclyl groups,
98 -C(=O)-O-heterocyclyl groups, -C(=O)NH(heterocyclyl) groups,
99 -C(=O)-N(heterocyclyl)₂ groups, -C(=O)-N(alkyl)(heterocyclyl)
100 groups, -C(=O)-N(aryl)(heterocyclyl) groups, substituted and
101 unsubstituted heterocyclylaminoalkyl groups, substituted and
102 unsubstituted diheterocyclylaminoalkyl groups, substituted and
103 unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted
104 and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups,
105 substituted and unsubstituted hydroxyalkyl groups, substituted
106 and unsubstituted alkoxyalkyl groups, substituted and

107 unsubstituted aryloxyalkyl groups, and substituted and
108 unsubstituted heterocycloxyalkyl groups;

109 R^{12} is selected from the group consisting of H, -OH, alkoxy
110 groups, aryloxy groups, -NH₂, -NH(alkyl) groups, -NH(aryl)
111 groups, -N(alkyl)₂ groups, -N(aryl)₂ groups, -N(alkyl)(aryl)
112 groups, substituted and unsubstituted alkyl groups, substituted
113 and unsubstituted aryl groups, -NH(heterocyclyl) groups,
114 -N(heterocyclyl)₂ groups, -N(alkyl)(heterocyclyl) groups, and
115 -N(aryl)(heterocyclyl) groups;

116 R^{14} is selected from the group consisting of substituted and
117 unsubstituted alkyl groups, substituted and unsubstituted aryl
118 groups, substituted and unsubstituted heterocyclyl groups,
119 substituted and unsubstituted heterocyclylalkyl groups, -C(=O)H,
120 -C(=O)-alkyl groups, -C(=O)-aryl groups, -C(=O)-heterocyclyl
121 groups, -C(=O)NH₂, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl)
122 groups, -C(=O)N(alkyl)₂ groups, -C(=O)N(aryl)₂ groups,
123 -C(=O)N(alkyl)(aryl) groups, -C(=O)NH-heterocyclyl groups,
124 -C(=O)N-(heterocyclyl)₂ groups, -C(=O)N(alkyl)(heterocyclyl)
125 groups, -C(=O)N(aryl)(heterocyclyl) groups, substituted and
126 unsubstituted aminoalkyl groups, substituted and unsubstituted
127 alkylaminoalkyl groups, substituted and unsubstituted
128 dialkylaminoalkyl groups, substituted and unsubstituted
129 arylaminoalkyl groups, substituted and unsubstituted
130 diarylaminoalkyl groups, substituted and unsubstituted
131 (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted
132 heterocyclylaminoalkyl groups, substituted and unsubstituted
133 diheterocyclylaminoalkyl groups, substituted and unsubstituted
134 (heterocyclyl)(alkyl)aminoalkyl groups, substituted and
135 unsubstituted (heterocyclyl)(aryl)aminoalkyl groups, substituted
136 and unsubstituted alkoxyalkyl groups, substituted and

137 unsubstituted aryloxyalkyl groups, substituted and unsubstituted
138 hydroxyalkyl groups, and substituted and unsubstituted
139 heterocycloxyalkyl groups;

140 R^{15} is selected from the group consisting of H, substituted and
141 unsubstituted alkyl groups, substituted and unsubstituted aryl
142 groups, and substituted and unsubstituted heterocyclyl groups;

143 R^{16} is selected from the group consisting of H, substituted and
144 unsubstituted alkyl groups, substituted and unsubstituted aryl
145 groups, substituted and unsubstituted heterocyclyl groups,
146 $-C(=O)H$, $-C(=O)$ -alkyl groups, $-C(=O)$ -aryl groups, $-C(=O)NH_2$,
147 $-C(=O)NH$ (alkyl) groups, $-C(=O)NH$ (aryl) groups,
148 $-C(=O)N$ (alkyl)₂ groups, $-C(=O)N$ (aryl)₂ groups,
149 $-C(=O)N$ (alkyl)(aryl) groups, $-C(=O)O$ -alkyl groups, $-C(=O)O$ -aryl
150 groups, substituted and unsubstituted aminoalkyl groups,
151 substituted and unsubstituted alkylaminoalkyl groups,
152 substituted and unsubstituted dialkylaminoalkyl groups,
153 substituted and unsubstituted arylaminoalkyl groups, substituted
154 and unsubstituted diarylaminoalkyl groups, substituted and
155 unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and
156 unsubstituted heterocyclylalkyl groups, $-C(=O)$ -heterocyclyl
157 groups, $-C(=O)$ -O-heterocyclyl groups, $-C(=O)NH$ (heterocyclyl)
158 groups, $-C(=O)$ -N(heterocyclyl)₂ groups, $-C(=O)$ -
159 N(alkyl)(heterocyclyl) groups, $-C(=O)$ -N(aryl)(heterocyclyl)
160 groups, substituted and unsubstituted heterocyclylaminoalkyl
161 groups, substituted and unsubstituted diheterocyclylaminoalkyl
162 groups, substituted and unsubstituted
163 (heterocyclyl)(alkyl)aminoalkyl groups, substituted and
164 unsubstituted (heterocyclyl)(aryl)aminoalkyl groups, substituted
165 and unsubstituted hydroxyalkyl groups, substituted and
166 unsubstituted alkoxyalkyl groups, substituted and unsubstituted

167 aryloxyalkyl groups, and substituted and unsubstituted
168 heterocyclyloxyalkyl groups; and

169 R^{17} , R^{19} , and R^{20} may be the same or different and are
170 independently selected from the group consisting of H, $-NH_2$,
171 $-NH(alkyl)$ groups, $-NH(aryl)$ groups, $-N(alkyl)_2$ groups, $-N(aryl)_2$
172 groups, $-N(alkyl)(aryl)$ groups, $-NH(heterocyclyl)$ groups,
173 $-N(heterocyclyl)(alkyl)$ groups, $-N(heterocyclyl)(aryl)$ groups,
174 $-N(heterocyclyl)_2$ groups, substituted and unsubstituted alkyl
175 groups, substituted and unsubstituted aryl groups, $-OH$,
176 substituted and unsubstituted alkoxy groups, substituted and
177 unsubstituted heterocyclyl groups, substituted and unsubstituted
178 aryloxy groups, heterocyclyloxy groups, $-NHOH$, $-N(alkyl)OH$
179 groups, $-N(aryl)OH$ groups, $-N(alkyl)O-alkyl$ groups, $-N(aryl)O-$
180 $alkyl$ groups, $-N(alkyl)O-aryl$ groups, and $-N(aryl)O-aryl$ groups.

1 2. The compound according to claim 1, wherein Y is
2 selected from the group consisting of $-OH$, $-OR^8$ groups, and $-NR^{10}R^{11}$
3 groups.

1 3. The compound according to claim 1, wherein Y is a
2 $-NR^{10}R^{11}$ group.

1 4. The compound according to claim 1, wherein Z is an
2 NR^{13} group.

1 5. The compound according claim 1, wherein R^4 and R^7 are
2 hydrogen and R^5 and R^6 are selected from the group consisting of hydrogen
3 and alkyl groups having from 1 to 4 carbon atoms.

1 6. The compound according to claim 1, wherein R^5 or R^6 is
2 an $-OR^{14}$ group and R^{14} is an alkyl, aryl, heterocyclyl, or heterocyclylalkyl
3 group.

1 7. The compound according to claim 1, wherein R⁵ or R⁶ is
2 a -OCH₂(CH₂)_q(heterocyclyl) group and q is 0, 1, 2, 3, or 4.

1 8. The compound according to claim 1, wherein R¹⁷ is
2 selected from the group consisting of substituted and unsubstituted alkyl
3 groups, substituted and unsubstituted aryl groups, -NH₂, -NH(alkyl) groups,
4 -N(alkyl)₂ groups, -NH(aryl) groups, -N(aryl)₂ groups, -N(alkyl)(aryl) groups,
5 -NH(heterocyclyl) groups, -N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl)
6 groups, -N(heterocyclyl)₂ groups, and N-containing heterocycles, wherein the
7 N-containing heterocycles are bonded to the carbonyl carbon of the -C(=O)-
8 R¹⁷ group through either a nitrogen atom or a carbon atom in the rings of the
9 N-containing heterocycles.

1 9. The compound according to claim 1, wherein one of R¹⁰
2 or R¹¹ is H.

1 10. The compound according to claim 1, wherein R¹⁰ and R¹¹
2 are both H.

1 11. The compound according to claim 10, wherein R¹ and R²
2 join to form a substituted or unsubstituted 6 membered ring comprising at
3 least one N atom.

1 12. The compound according to claim 11, wherein at least
2 one of R⁵ or R⁶ is a substituted or unsubstituted heterocyclyl group.

1 13. The compound according to claim 11, wherein at least
2 one of R⁵ or R⁶ is a substituted or unsubstituted heterocyclyl group selected
3 from the group consisting of morpholine, piperazine, piperidine, 1,2,3-triazole,
4 1,2,4-triazole, tetrazole, pyrrolidine, pyrazole, pyrrole, thiomorpholine,
5 homopiperazine, benzimidazole, oxazolidin-2-one, pyrrolidin-2-one, imidazole,
6 isoxazole, oxazole, isothiazole, thiazole, thiophene, furan, pyran,
7 tetrahydrothiophene, tetrahydrofuran, tetrahydropyran, and pyridine.

1 14. The compound according to claim 1, wherein R¹ and R²
2 join to form a substituted or unsubstituted 6 membered ring comprising at
3 least one N atom.

1 15. The compound according to claim 1, wherein at least one
2 of R⁵ or R⁶ is a substituted or unsubstituted heterocyclyl group.

1 16. The compound according to claim 1, wherein at least one
2 of R⁵ or R⁶ is a substituted or unsubstituted heterocyclyl group comprising at
3 least one O or N atom.

1 17. The compound according to claim 1, wherein at least one
2 of R⁵ or R⁶ is a substituted or unsubstituted heterocyclyl group selected from
3 the group consisting of morpholine, piperazine, piperidine, 1,2,3-triazole,
4 1,2,4-triazole, tetrazole, pyrrolidine, pyrazole, pyrrole, thiomorpholine,
5 homopiperazine, benzimidazole, oxazolidin-2-one, pyrrolidin-2-one, imidazole,
6 isoxazole, oxazole, isothiazole, thiazole, thiophene, furan, pyran,
7 tetrahydrothiophene, tetrahydrofuran, tetrahydropyran, and pyridine.

1 18. The compound according to claim 1, wherein Y is
2 selected from the group consisting of from -N(CH₃)₂, -NH(CH₃), -NH(CH₂CH₃),
3 -N(CH₂CH₃)₂, -NH(aryl) groups, -N(aryl)₂ groups, -NHNH₂, -NHN(CH₃)₂,
4 -N(CH₃)NH(CH₃), -NH(CH₂)_mNH₂ groups, -NH(CH₂)_mNH(alkyl) groups,
5 -NH(CH₂)_mN(alkyl)₂ groups, -N(alkyl)(CH₂)_mNH₂ groups,
6 -N(alkyl)(CH₂)_mNH(alkyl) groups, -N(alkyl)(CH₂)_mN(alkyl)₂ groups,
7 -NH(CH₂)_n(heterocyclyl) groups, -N(alkyl)[(CH₂)_n(heterocyclyl)] groups,
8 -NH(CH₂)_mOH groups, -NH(CH₂)_mOCH₃ groups, -NHCH₂CH(NH₂)CH(CH₃)₂,
9 -NH(2-aminocyclohexyl), -NH(cyclohexyl), -NHCH₃, -NH(N-morpholinyl), and
10 -NH(quinuclidyl), wherein m is 2, 3, or 4 and n is 0, 1, 2, or 3.

1 19. A pharmaceutical formulation, comprising the compound
2 according to claim 1 in combination with a pharmaceutically acceptable
3 carrier.